Report on

Open RDA – RVP8 Data Quality Using Meteorological Data:

Base Data Analysis

Prepared by

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Overview

The SIGMET/GMAP Evaluation Team began evaluating Base Data from the KJIM
ORDA testbed on June 2, 2004. Two factors combined to hamper the team's data
collection efforts during the period from June 2 - July 30. First, the ORDA team did not
have access to the KCRI antenna for approximately 30% of the time during this period
due to requirements to test RPG Legacy Build 6.0. Secondly, ORDA hardware and
software problems interfered with data collection efforts on several occasions. In
addition to the evaluation team's efforts, Steve Smith, ROC Software Engineering,
provided several observations on ORDA data quality.

Appendix A shows the data cases and archive index. The data case table describes the
case date, weather event, and comments. The archive index table describes what files can
be found on each CD of the archive.

Base Data Analysis

The following is a summary of the data collection efforts and the findings and
observations of the team:

1. On 2 June 50 volume scans were collected from KJIM and 24 volume scans were
   collected from KTLX. Product data bases from KJIM and KTLX, level II data
   from KTLX, and .RAW files from KJIM were archived. Committee members
   evaluated reflectivity, velocity, and spectrum width products. The GMAP clutter
   filter was applied via a clutter map, generated before the radar data was collected.
   Outflow boundaries were clearly observed, Figure 1, in all three base data
   products and high precipitation cores were clearly observed in the reflectivity
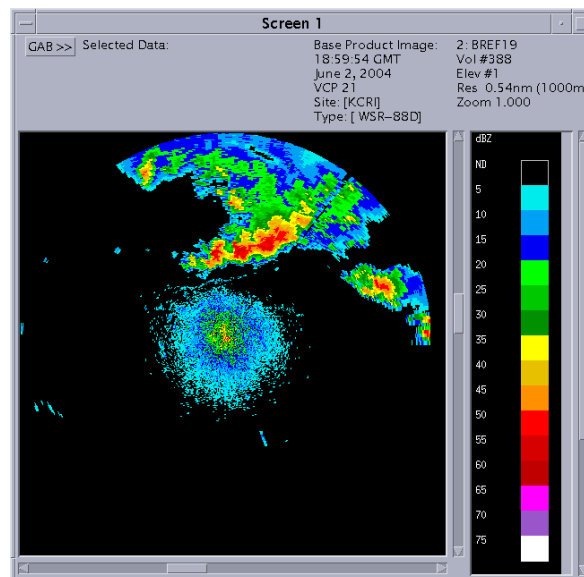   data.

Figure 1 - Reflectivity 2 June 2004

There were no noticeable problems noted with the GMAP clutter filter. Due to calibration and threshold problems, radial spikes and significant noise were observed in the velocity and spectrum width products, Figure 2.
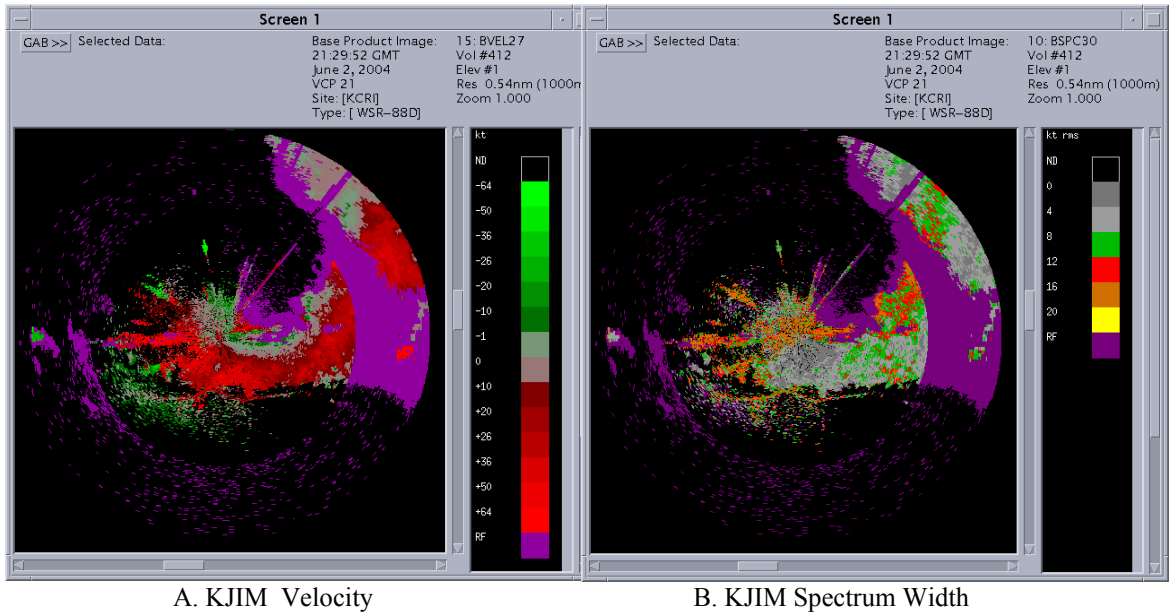

| A. KJIM Velocity | B. KJIM Spectrum Width |

Figure 2 - Velocity and Spectrum Width 2 June 2004

A range normalization problem was also noted in the reflectivity products, Figure 3.
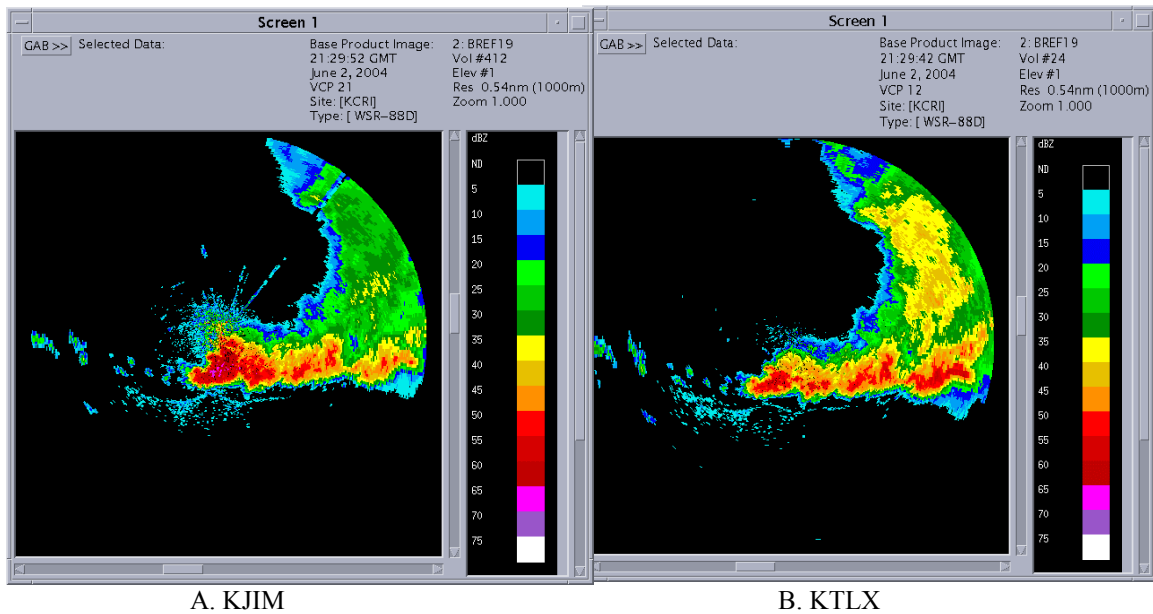

| A. KJIM | B. KTLX |

Figure 3 - Reflectivity 2 June 2004

2) A SIGMET fix to the threshold problem was applied to KJIM on Monday June 7.
An issue with SIGMET reflectivity processing in the batch cuts was noted by Steve
Smith. The ORDA team did not have the KCRI antenna June 2-9.

3) Approximately 30 hours of radar data were collected and archived from KJIM
between 18Z on June 21 and 23Z on June 23. Approximately 26 hours of radar data
were also collected and archived from KTLX via the ROC LDM. Level II data,
.raw data, and product databases were collected from KJIM and an Applications
Branch workstation. A product database was also collected on a legacy PUP located
in the ROC north equipment room. The stratiform rain event and subsequent clear
air conditions gave the team an opportunity to evaluate KJIM base data. Three
problems were noted:

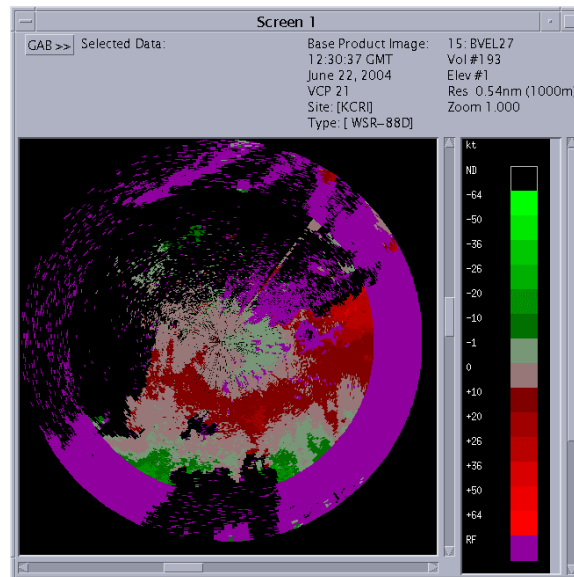a) Noisy Data Past 95 nautical miles I the range folded region, Figure 4.

Figure 4 - Velocity 22 June 2004

b) Returns Colder than KTLX For The Same Storm (Approx 5 Dbz), Figure 5.
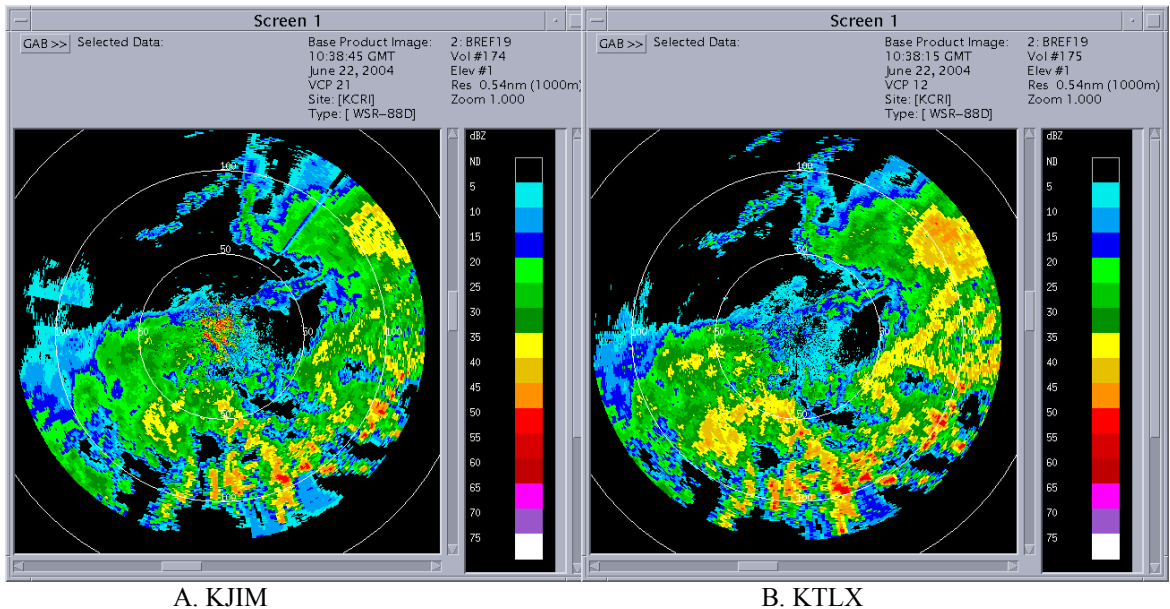

A. KJIM   B. KTLX

Figure 5 - Reflectivity 22 June 2004

c) High Reflectivity Returns Close To The Radar, Figure 6. The high returns were caused by incorrect calibration settings.
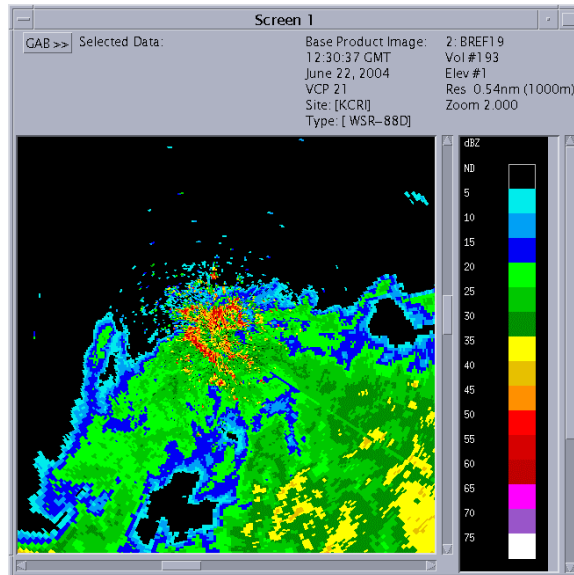

Figure 6 - Reflectivity 22 June 2004

4) Committee members evaluated base data products collected from July 16-19. A few base data products were extracted from the 728 volume scans collected mostly in clear air. On the good side, fine details in the reflectivity products, classic

Doppler velocity fields, bird echoes and sun spikes were observed. The ORDA
base products compared favorably with KTLX, realizing that KTLX runs a few dB
hotter than KJIM, Figure 7.

A. KJIM

B. KTLX
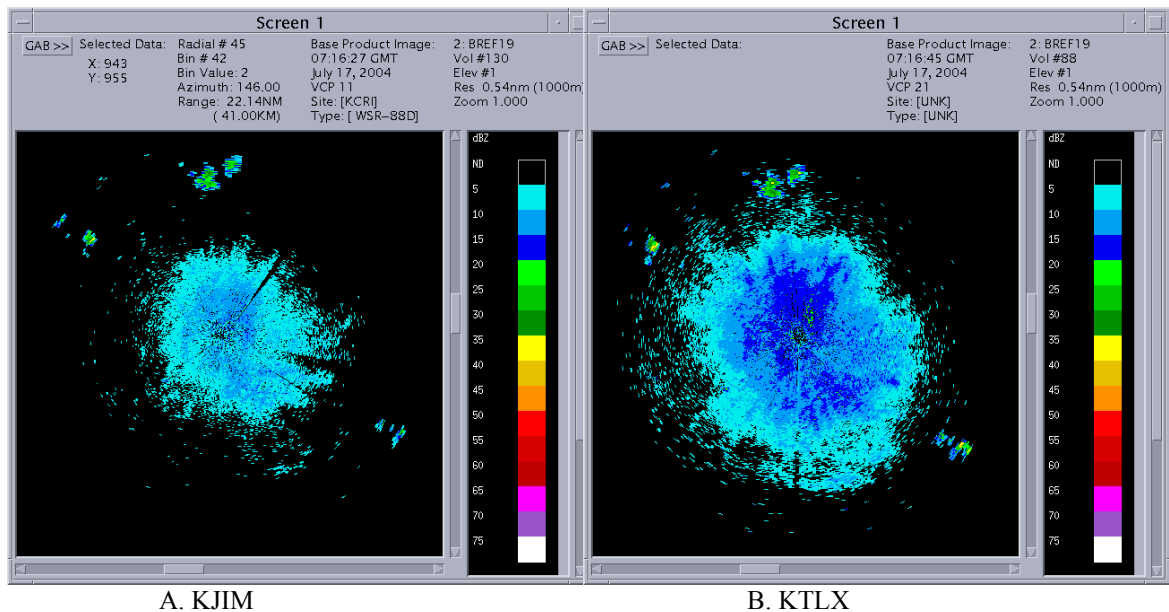
Figure 7 - Reflectivity 17 July 2004

On the bad side, approximately 30% of the volume scans, randomly distributed
through out the time period, contained bad reflectivity, velocity, and spectrum
width data. Bad reflectivity looked like the clutter filter had been turned off with
uncharacteristically high values near the radar. Bad velocity data looked like
difference radials contained different dealiasing errors, Figure 8.
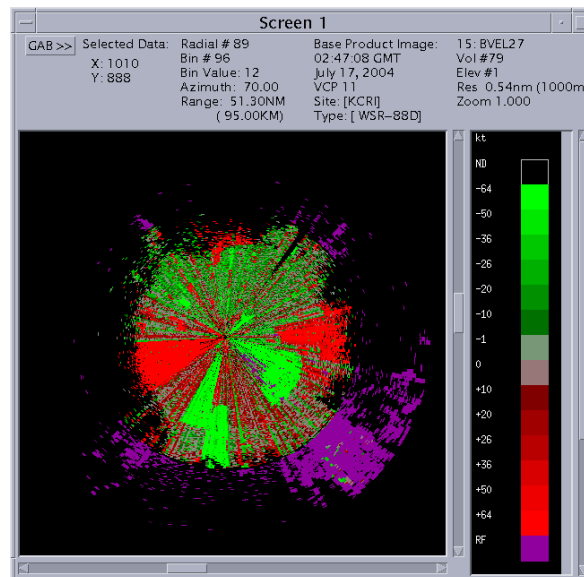
Figure 8 - Velocity 17 July 200

Bad spectrum width data had constant, high values everywhere. Many of the bad volume scans had velocity dealiasing errors. Some noise was evident in the velocity and spectrum width products, especially at the higher tilts. Subsequent investigations proved that problems lay with the 72 MHz IFD that had been recently installed.

5) Committee members evaluated base data products collected July 23-27. A few base data products were extracted from the 275 volume scans collected during stratiform precipitation. Fine details in all base moment products and classic Doppler velocity fields were observed. GMAP properly filled in data near the radar. The ORDA base products compared favorably with KTLX, realizing that KTLX runs a few dB hotter than KJIM, Figure 9.
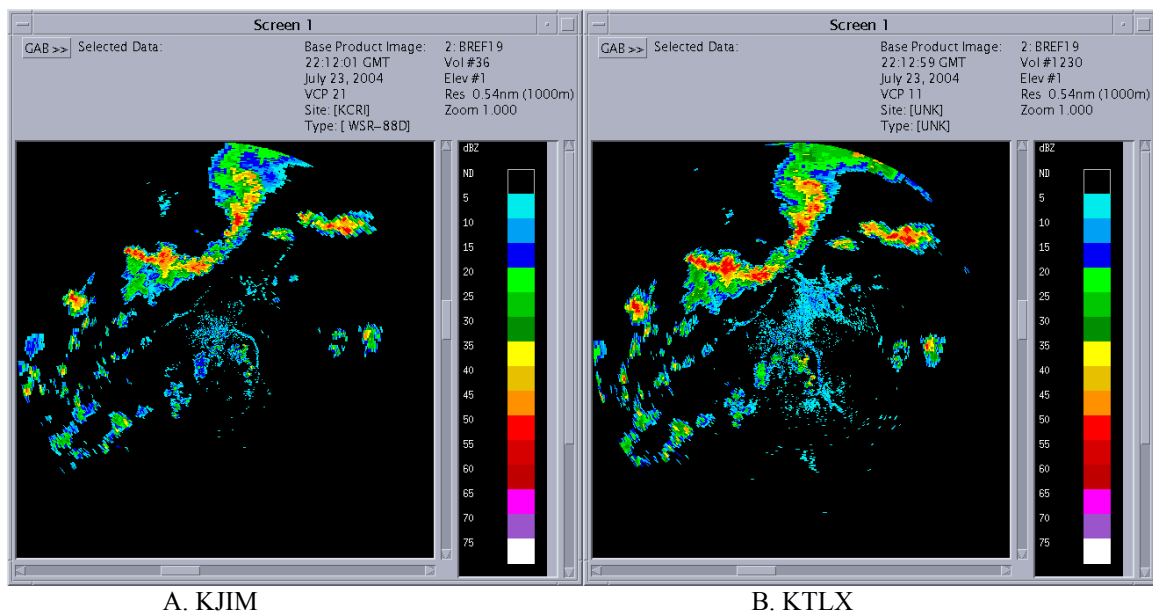

A. KJIM   B. KTLX

Figure 9 - Reflectivity 23 July 2004

Some speckled fringes, due to threshold problems, were observed around large
precipitation areas, Figure 10.

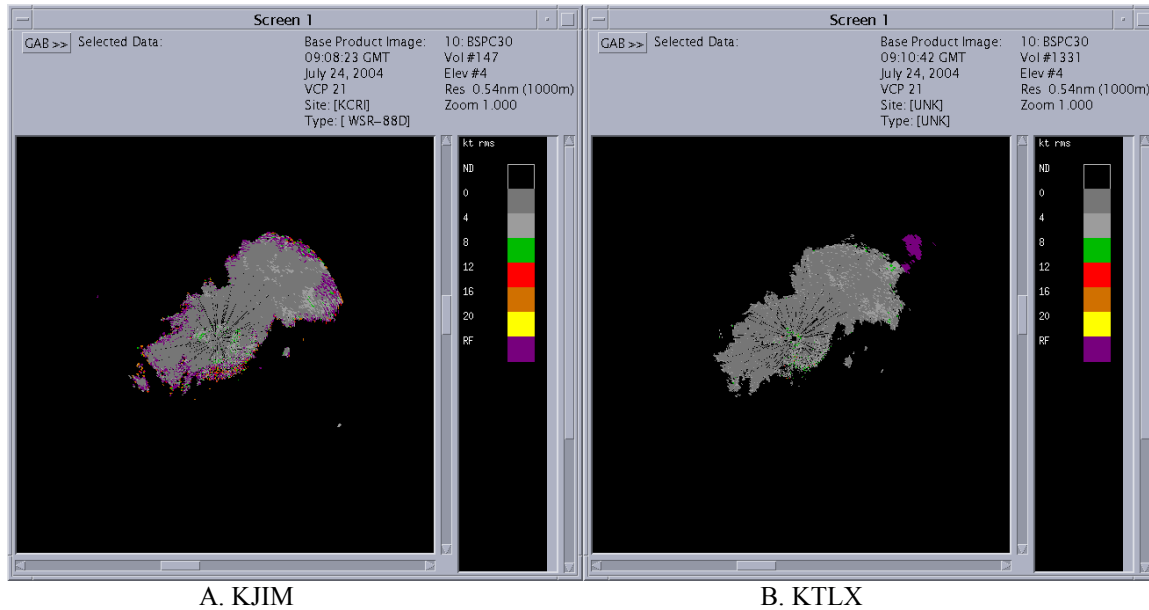A. KJIM   B. KTLX

Figure 10 – Spectrum Width 24 July 2004

Most of the data looked much better, with the exception of the 30-35% of bad
volume scans similar to those observed in the July 16-19 data case. Problems with
noisy data, range normalization, high returns near the radar, and reflectivity
processing were resolved in the approximately 65-70% of the VCPs that produced
good data. In addition, improved calibration of the system brought the reflectivity
differences between KJIM and KTLX down to approx 3dbz (note: KTLX is known
to run 1.5 to 2.0 Dbz hotter than surrounding radars).   Spurious rings in upper tilt
reflectivity products were also noted. This problem was present in both KTLX and
KJIM data and is a latent defect with the WSR88-D system.

6) Steve Smith also noted two other data quality problems. Velocity data on the batch
    waveforms where the data is obviously range ambiguous is denoted as below
    threshold (data value 0) when it should be denoted as RF (data value 1).   This
    problem was not observed on CD w/ambiguity resolution waveform cuts.

    Also, in VCP 121 data it appeared that the number of Doppler bins reported on the
    CD w/o ambiguity resolution was not always correct. For example, one of the VCP
    121 0.5 deg cuts had an unambiguous range approximately 130 km but the number
    of Doppler bins was specified as 920, Figure 11. Without ambiguity resolution, the
    number of bins should be restricted to the unambiguous range for the PRF in use.
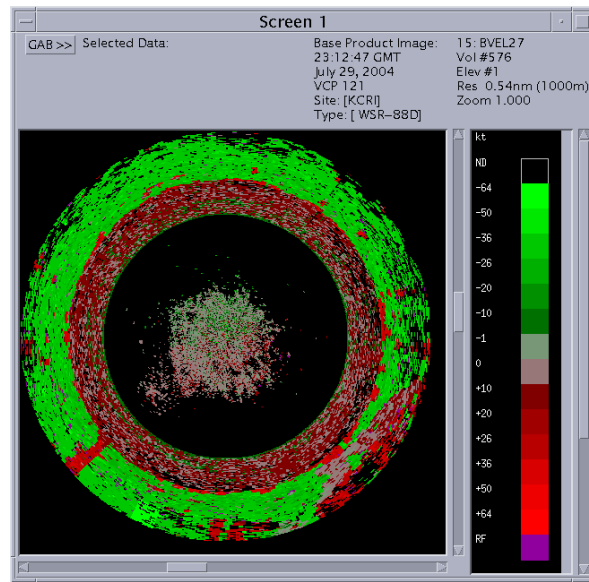
Figure 11 - Reflectivity 29 July 2004

7) Data quality improved as ROC ENG / ORDA team engineers reinstalled the 72 MHz IFD and corrected software problems. Committee members evaluated a few of the 230 volume scans of base data products collected between July 28th and August 4th. A few problems remain.

   a) Approximately fifteen hours of data were collected on 4 August 2004. Committee members noticed several cases in which there was lots of range folding in the spectrum width product, but nearly none in corresponding velocity products, Figure 12.
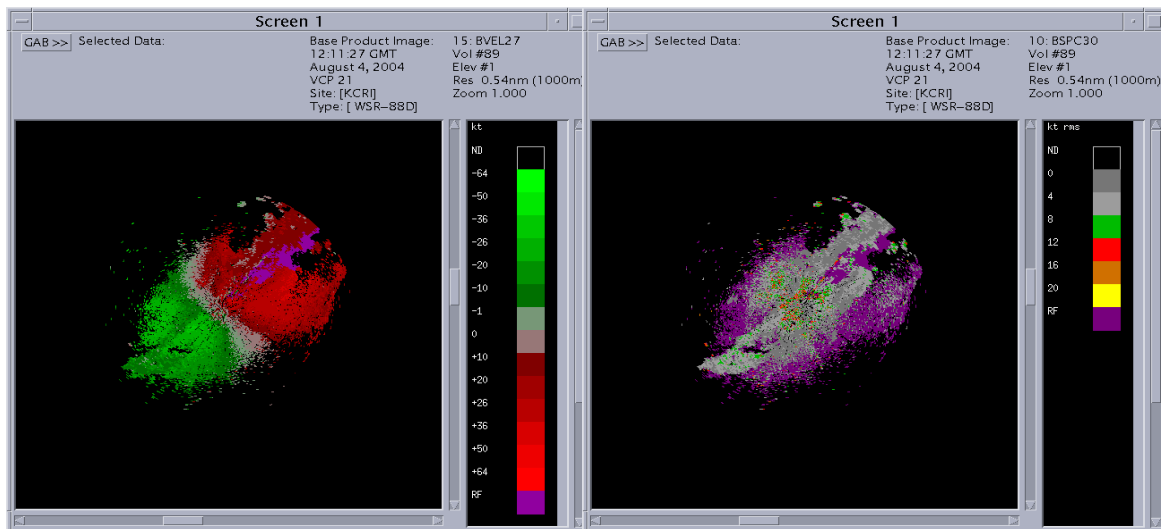
A. KJIM Velocity   B. KJIM Spectrum Width

Figure 12 - Velocity and Spectrum Width 4 August 2004

b) High spectrum width values were noted; but, the high values were not associated with ground clutter, Figure 13.
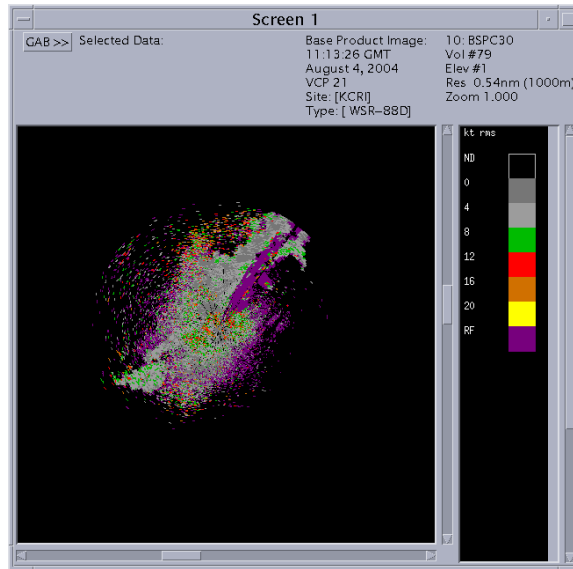
Figure 13 – Spectrum Width 04 August 2004

c) Velocity was truncated at the unambiguous range rather than extending out to 230 km, Figure 14.
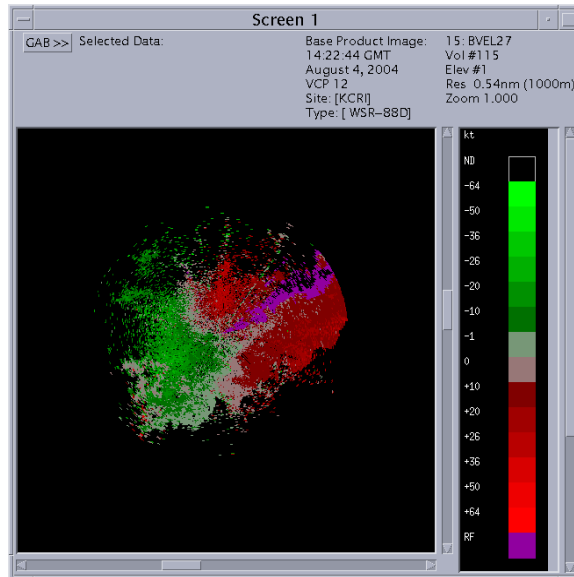
Figure 14 – Velocity 04 August 2004

Also the 1.8 degree batch cut clearly shows the lack of RF beyond the Doppler unambiguous range, Figure 15.
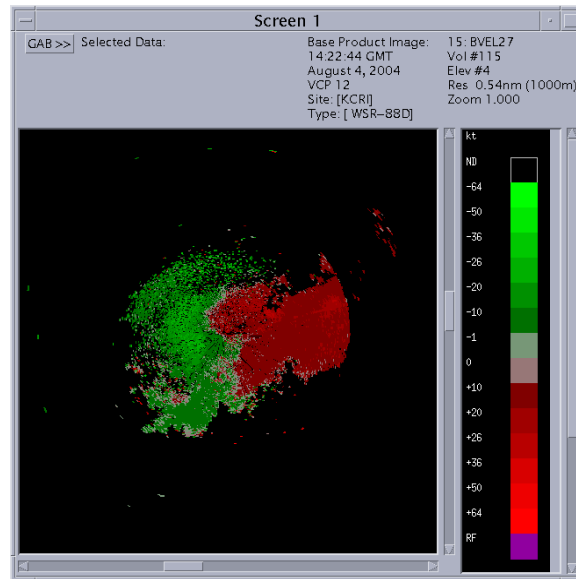
**Figure 15 – Velocity 04 August 2004
1.8 degree batch cut (VCP 12)**

d) Speckles were observed in upper level tilts of velocity and spectrum width products. There some question whether this is the result of noise or increased sensitivity of the 72 MHz IFD, Figure 16.
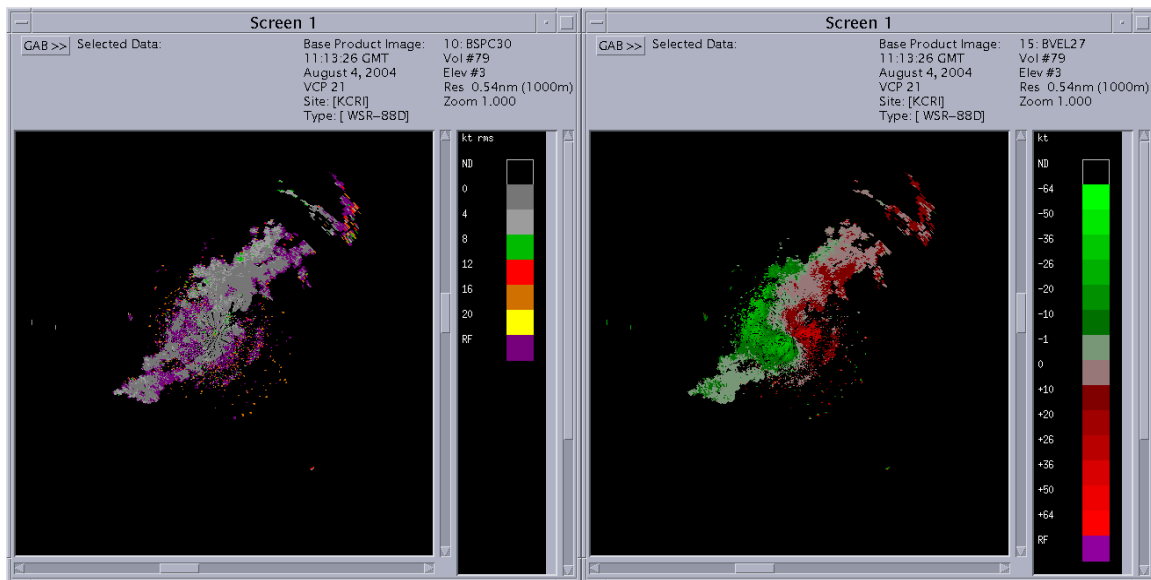
A. Spectrum   B. Velocity

Figure 16 – Spectrum Width and Velocity 04 August 2004 (Tilt 3)

e) Some higher values of spectrum width were observed around larger areas of return, Figure 17.
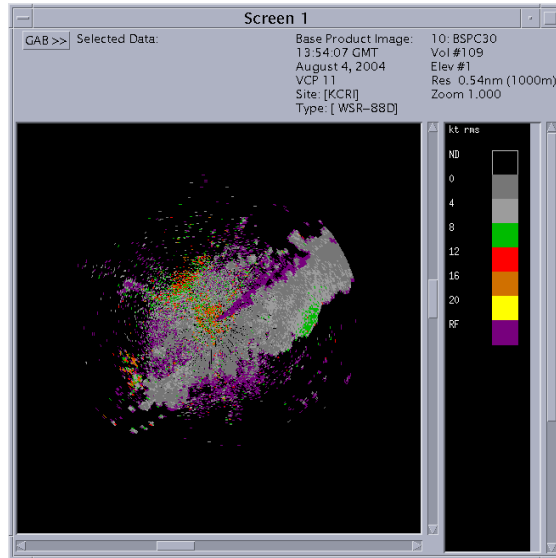
Figure 17 – Spectrum Width 04 August 2004

f) Radial spokes were observed in a few velocity and spectrum width products, Figure 18.
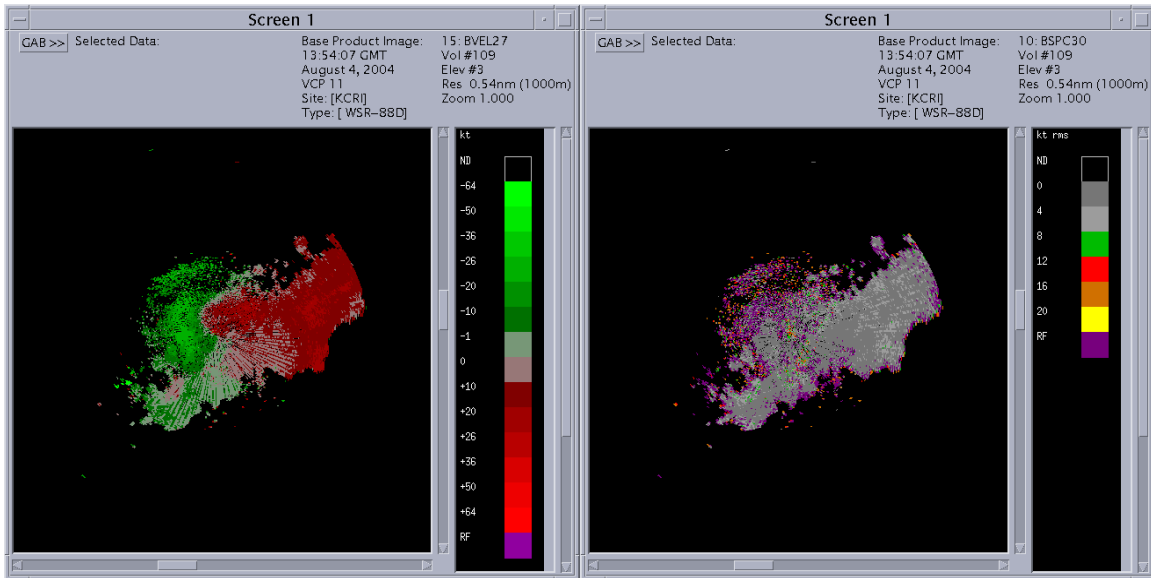
A. Velocity   B. Spectrum Width

Figure 18 – Velocity and Spectrum Width 04 August 2004 (Tilt 3)

Products collected with VCP 121 appear to be bad, Figure 19.

A. Spectrum   B. Velocity
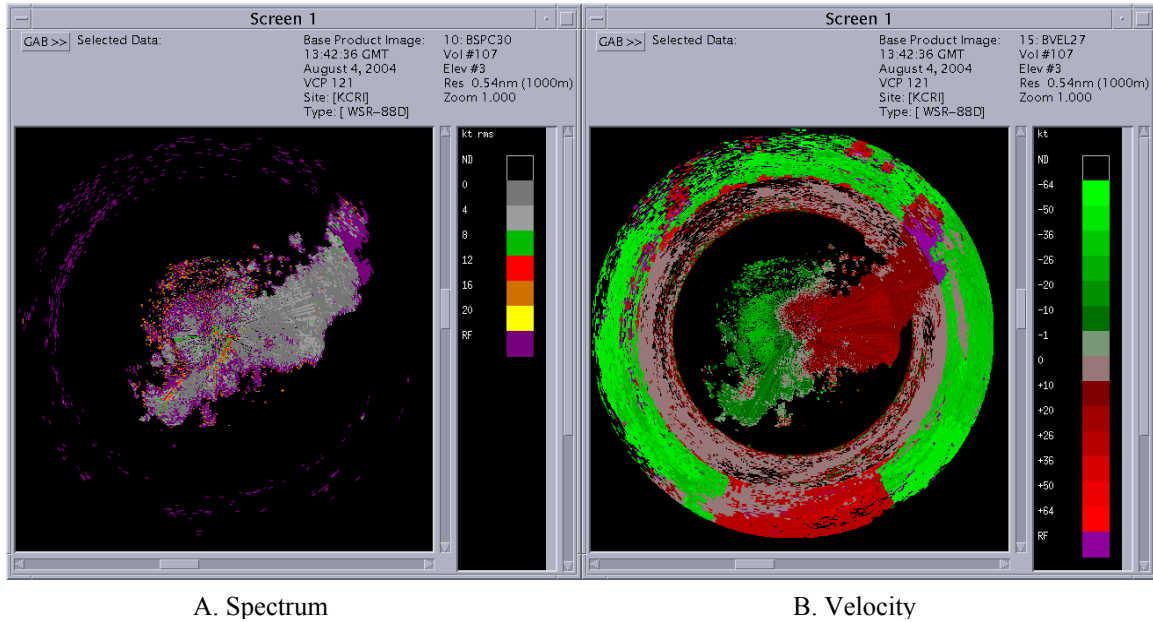
Figure 19 – Spectrum Width and Velocity 04 August 2004 (Tilt 3)

g) Reflectivity product comparisons between KJIM and KTLX still show KTLX
running hotter. ROC technicians calibrated KTLX because it was hot compared to
KJIM, Figure 20.

A. KJIM   B. KTLX
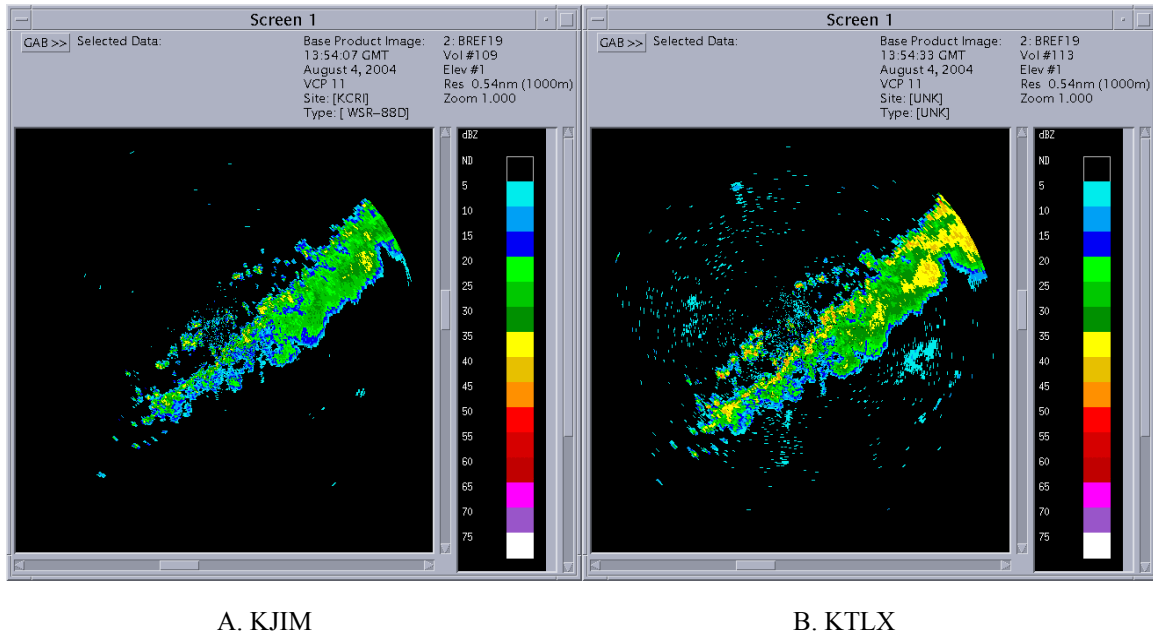
Figure 20 – Reflectivity 04 August 2004

Dave Warde took an action item to process Level II data from KJIM and KTLX
in MATLAB to investigate after KTLX was calibrated. Dave's results showed
that KTLX and KJIM are within 1.5 dB of each other, Figure 21.

A. KJIM Reflectivity   B. KTLX Reflectivity
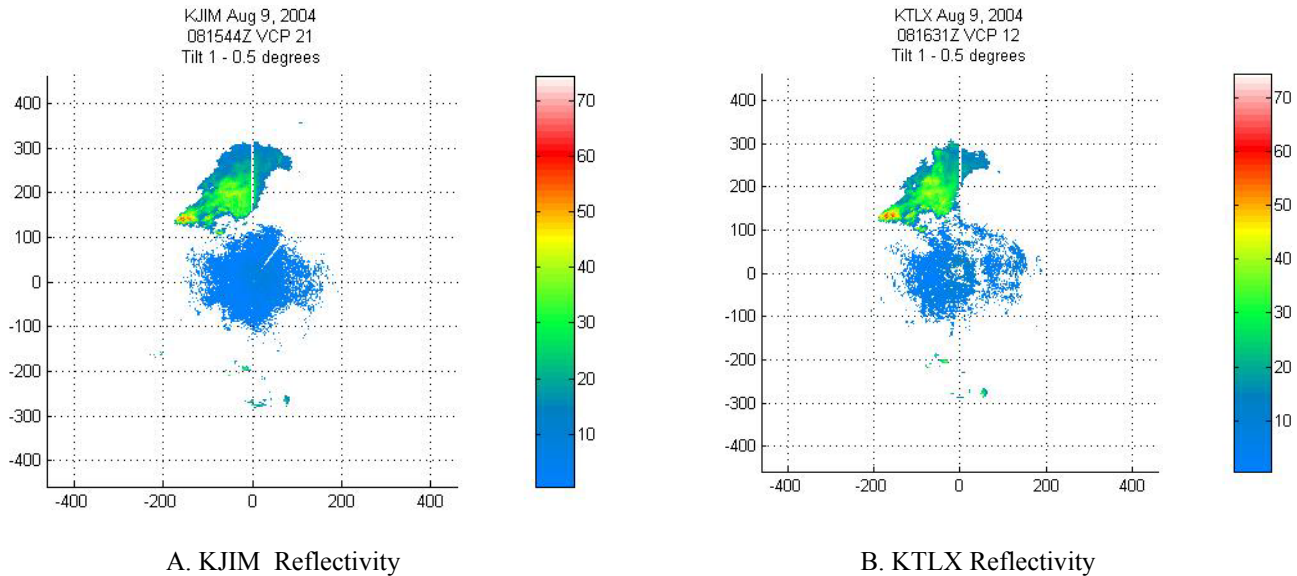
Figure 21 – Reflectivity 9 August 2004

In summary, the SIGMET/GMAP Evaluation team has identified numerous data quality
issues with the ORDA system. The ORDA/RSIS team has been very complimentary of
the evaluation team's efforts, stating that they were invaluable in helping them find the
cause of the problems. As of this date, most SIGMET/GMAP data quality issues have
been resolved and data quality has vastly improved. Solutions to the remaining problems
are being developed by the ORDA/RSIS team and are expected to be implemented NLT
August 19. The SIGMET/GMAP Evaluation team will continue their Base Data
evaluation as part of the ORDA System Test, which is scheduled to begin in mid-August
and continue until late-November.

APPENDIX A – Data Cases and Archive Index

Cases

Table 1 shows the different data cases that were collected and a few comments about each one.

Table 4 – Data Cases

Date	Weather Type	Comments
13 May	Squall Line	TLX / OUN comparison - OUN not usable
02 June	Squall Line	Very noisy data, range normalization problems, data not usable
21 June	Stratiform Rain	Very noisy data, data not usable
30 June	Showers	Very noisy data, about 1 hour .raw collected, data not usable
16 July	Clear Air	60 hours of .raw and bz2 data collected from KJIM and KTLX, noise problem solved 30% data not usable - bad volume scans at random intervals
22 July	Clear Air	About 12 hours of .raw data collected, products look like 16 July
23 July	Showers	About 14 hours of .raw and bz2 data collected from KJIM and KTLX, KJIM data stopped flowing about 1400Z on Saturday, KTLX .bz2 files collected rest of weekend
26 July	Clear Air	NOP1_1500.lb,KTLX_1230.lb - verify bad VCP's not present with 36 MHz IFD using KCRI 27Jul - bad VCP's not present with 36 MHz IFD using KJIM
28 July	Stratiform Rain	Numerous volume scan restarts and RDA alarms caused KJIM to be shutdown during the rain. Volume scans 351 - 376 on KJIM had some data available for comparison. From the 28th to 29th stratiform rain was collected all night.
29 July	Stratiform Rain	Attempted to collect data all night but only got about 3 hours from 7 - 10 pm. Bad looking VCP 121 data.
30 July	Clear Air	Attempted to collect data all weekend but only collected from Friday night through Saturday morning. The transmitter failed. There are some good clear air scans among many bad volume scans.
03 August	Clear Air / Squall Line	Data collected overnight. 72 MHz IFD reinstalled. No bad volume scans. Squall line came through the following morning.
04 August	Clear Air	9 Volume scans collected with NOP4. 72 MHz tested unsuccessfully on KCRI.
05 August	Clear Air	About 55 volume scans and 12 hours of .raw data were colleted. Engineers just wanted to know if the 72 MHz IFD was still causing bad volume scans or not. It appears fixed.
6 August	Clear Air	KTLX reclaibrated, 2 - 4 dB hot. Data stopped flowing about 0621Z
7 August	Clear Air / Line of Showers	KTLX re-calibrated, 2 - 4 dB hot. Bad volume scans caused by 72 MHz IFD, Showers 12Z 8th
8 August	Clear Air / Small Area of Showers	KTLX reclaibrated, 2 - 4 dB hot. bad volume scans caused by 72 MHz IFD, Showers 12Z 9th

Date	Weather Type	Comments
9 August	Clear Air / Small Area of Showers	KTLX reclabriated, 2 - 4 dB hot. Bad volume scans fixed. Showers 01 Z 10th
10 August	Storms near metro around 0Z, storms to NNW around 3 Z heavy precip event between 6 and 15Z	Collected KJIM data between 2300 Z and 04 Z when it went down. Missed the heavy precip event. KTLX data feed to LDM was down from the start and we could not restart it. Will have to order KTLX data from NSSL or NCDC. Several hours of the end of the precip event captured.

Data Archive

Table 2 shows data contained in the archive. The archive resides on CD ROM disks.

Table 2 – Data Archive

CD Name	Data Source	File Name	Begin Time	End Time	Comments
02 June #0	KJIM Product DB	02Jun23RAW_KJIM.lb 02Jun2300KJIM.lb 02JunLevel_II_KJIM.lb 02JunLevel_II_KJIMallfiles.lb			
	KTLX Product DB	02Jun2300TLX.lb			
	KJIM .raw	20040602194718.raw	06/02 1947	06/02 2136	
	KJIM .bz2	KJIM_2004_06_02_19_52_50.bz2	06/02 1952	06/02 2135	
	KJIM .xls	ProductInventory.xls			
	KTLX .bz2	KTLX_2004_06_02_19_53_32.bz2	06/02 1953	06/02 2125	
	KTLX .xls				
	Power Point	June2_TLX_JIM_compare.ppt			
KJIM 21-22 Jun '04 I New	KJIM Product DB				
	KTLX Product DB				
	KJIM .raw	20040617130851.raw	06/17 1308	06/22 2244	
	KJIM .bz2				
	KJIM .xls				
	KTLX .bz2	KTLX_2004_06_21_20_46_17.bz2	06/21 2046	06/22 1648	
	KTLX .xls				
	Power Point				
21 June #1	KJIM Product DB	23June1238KJIM.lb			

	KTLX Product DB				
	KJIM .raw				
	KJIM .bz2				
	KJIM .xls				
	KTLX .bz2				
	KTLX .xls				
	Power Point	June2_TLX_JIM_compare.ppt June23_KJIM.ppt			
21 June #2	KJIM Product DB	22June1242KJIM.lb 22June1657KJIM.lb 22June2051KJIM.lb			
	KTLX Product DB	22June0239KTLX.lb 22June1207KTLX.lb 22June1655KTLX.lb			
	KJIM .raw	20040622171254.raw	06/22 1712	06/23 1224	
	KJIM .bz2				
	KJIM .xls				
	KTLX .bz2				
	KTLX .xls				
	Power Point				
30 June	KJIM Product DB	30Jun14level2.lb 30Jun1400_raw.lb			
	KTLX Product DB				
	KJIM .raw	20040629225924.raw	06/29 2259	06/29 2341	
	KJIM .bz2	KJIM_2004_06_29_22_59_16.bz2	06/29 2259	06/29 2352	
	KJIM .xls				
	KTLX .bz2				
	KTLX .xls				
	Power Point	June2_TLX_JIM_compare.ppt June30_KJIM.ppt May_13_04_koun_vs_ktlx.ppt			
16 Jul #0	KJIM Product DB				
	KTLX Product DB				
	KJIM .raw	20040716172329.raw	07/16 1723	07/19 1208	
	KJIM .bz2				
	KJIM .xls				
	KTLX .bz2				
	KTLX .xls				
	Power Point				

16 Jul #1	KJIM Product DB	16Jul_KJIM_0249.lb 17Jul_KJIM_1211.lb 17Jul_KJIM_2056.lb			
	KTLX Product DB	17Jul_KTLX_1211.lb 17Jul_KTLX_2056.lb			
	KJIM .raw	20040719030951.raw	07/19 0309	07/19 1208	
	KJIM .bz2				
	KJIM .xls				
	KTLX .bz2				
	KTLX .xls				
	Power Point				
16 Jul #2	KJIM Product DB	18Jul_KJIM_0318.lb* 18Jul_KJIM_1230.lb 18Jul_KJIM_2045.lb			*typo on CD file. Actually reads: 18Jul_JKIM_0318.lb
	KTLX Product DB	18Jul_KTLX_0318.lb 18Jul_KTLX_1230.lb 18Jul_KTLX_2045.lb			
	KJIM .raw				
	KJIM .bz2				
	KJIM .xls				
	KTLX .bz2				
	KTLX .xls				
	Power Point				
16 Jul #3	KJIM Product DB	19Jul_KJIM_0219.lb 19Jul_KJIM_1220.lb			
	KTLX Product DB	19Jul_KTLX_0219.lb 19Jul_KTLX_1220.lb			
	KJIM .raw				
	KJIM .bz2				
	KJIM .xls				
	KTLX .bz2	KTLX_2004_07_16_21_11_22.bz2	7/16 2111	7/17 1000	
	KTLX .xls				
	Power Point				
16 Jul #4	KJIM Product DB				
	KTLX Product DB				
	KJIM .raw				
	KJIM .bz2				
	KJIM .xls	KJIM_16Jul.xls			
	KTLX .bz2	KTLX_2004_07_17_10_06_40.bz2	7/17 1006	7/19 1213	
	KTLX .xls	KTLX_16Jul.xls			
	Power Point	16Jul_KJIM.ppt			
22 Jul	KJIM Product DB	23Jul_1345_KJIM.lb			

	KTLX Product DB	26Jul_KTLX_1230.lb			
	KJIM .raw	20040722175937.raw	07/22 1759	07/23 1309	
	KJIM .bz2				
	KJIM .xls				
	KTLX .bz2	KTLX_2004_07_25_20_27_52.bz2	07/25 2027	07/26 1222	
	KTLX .xls				
	Power Point				
23 Jul #0	KJIM Product DB	24Jul_KJIM_0227.lb 24Jul_KJIM_1210.lb 24Jul_KJIM_2015.lb			
	KTLX Product DB	24Jul_KTLX_0227.lb 24Jul_KTLX_1210.lb 24Jul_KTLX_2015.lb 25Jul_KTLX_0245.lb			
	KJIM .raw				
	KJIM .bz2				
	KJIM .xls				
	KTLX .bz2				
	KTLX .xls				
	Power Point				
23 Jul #1	KJIM Product DB				
	KTLX Product DB	25Jul_KTLX_1230.lb 25Jul_KTLX_2030.lb			
	KJIM .raw	20040723184740.raw	07/23 1847	07/24 1434	
	KJIM .bz2	KJIM_2004_07_23_20_46_17.bz2	07/23 2046	07/24 1433	
	KJIM .xls				
	KTLX .bz2	KTLX_2004_07_23_18_01_10.bz2	07/23 1801	07/24 0152	
	KTLX .xls				
	Power Point				
23 Jul #2	KJIM Product DB				
	KTLX Product DB				
	KJIM .raw				
	KJIM .bz2				
	KJIM .xls	KJIM_24Jul.xls			
	KTLX .bz2	KTLX_2004_07_24_01_57_46.bz2	07/24 0157	07/25 2022	
	KTLX .xls	KTLX_24Jul.xls			
	Power Point	24Jul_KJIM.ppt			

26 Jul #0	KJIM Product DB	26Jul_NOP1_1500.lb 27Jul_KJIM_0230.lb 27Jul_KJIM_1313.lb 27Jul_KJIM_1515.lb			
	KTLX Product DB	26Jul_KTLX_1230.lb 27Jul_KTLX_0230.lb 27Jul_KTLX_1313.lb			
	KJIM .raw				
	KJIM .bz2				
	KJIM .xls				
	KTLX .bz2				
	KTLX .xls				
	Power Point				
26 Jul #1	KJIM Product DB				
	KTLX Product DB	27Jul_KTLX_1515.lb			
	KJIM .raw	20040725140324.raw	07/25 1403	07/27 1510	
	KJIM .bz2	KJIM_2004_07_26_21_50_22.bz2	07/26 2150	07/27 1451	
	KJIM .xls	KJIM_27Jul.xls			
	KTLX .bz2	KTLX_2004_07_26_21_40_40.bz2	07/26 2140	07/27 1454	
	KTLX .xls	KTLX_27Jul.xls			
	Power Point				
28 Jul #0	KJIM Product DB	28Jul_KJIM_1638.lb 29Jul_KJIM_0243.lb 29Jul_KJIM_1230.lb			
	KTLX Product DB	28Jul_KTLX_1638.lb 29Jul_KTLX_0243.lb 29Jul_KTLX_1230.lb			
	KJIM .raw	20040728132617.raw	07/28 1326	07/29 0328	
	KJIM .bz2				
	KJIM .xls				
	KTLX .bz2				
	KTLX .xls				
	Power Point				
28 Jul#1	KJIM Product DB				
	KTLX Product DB				
	KJIM .raw	20040729033257.raw	07/29 0332	07/29 1120	
	KJIM .bz2	KJIM_2004_07_28_13_42_19.bz2	07/28 1342	07/29 1119	
	KJIM .xls	KJIM_28Jul.xls			

	KTLX .bz2	KTLX_2004_07_28_13_37_47.bz2	07/28 1337	07/29 1215	
	KTLX .xls				
	Power Point	28Jul_KJIM.ppt			
29 Jul #0	KJIM Product DB	30Jul_KJIM_0309.lb			
	KTLX Product DB	30Jul_KTLX_0309.lb			
	KJIM .raw	20040729220436.raw	07/29 2204	07/30 0256	
	KJIM .bz2	KJIM_2004_07_30_00_59_01.bz2	07/30 0059	07/30 0256	
	KJIM .xls	KJIM_29Jul.xls			
	KTLX .bz2	KTLX_2004_07_29_21_41_56.bz2	07/29 2141	07/30 0305	
	KTLX .xls	KTLX_29Jul.xls			
	Power Point				
30 Jul #0	KJIM Product DB	31Jul_KJIM_0230.lb 31Jul_KJIM_1133.lb 31Jul_KJIM_2032.lb			
	KTLX Product DB	31Jul_KTLX_0230.lb 31Jul_KTLX_1133.lb 31Jul_KTLX_2032.lb			
	KJIM .raw				
	KJIM .bz2				
	KJIM .xls	KJIM_30Jul.xls			
	KTLX .bz2				
	KTLX .xls	KTLX_30Jul.xls			
	Power Point				
30 Jul #1	KJIM Product DB				
	KTLX Product DB				
	KJIM .raw	20040730193745.raw	07/30 1937	07/31 1434	
	KJIM .bz2	KJIM_2004_07_30_21_44_42.bz2	07/30 2144	07/31 1434	
	KJIM .xls				
	KTLX .bz2	KTLX_2004_07_30_21_20_05.bz2	07/30 2120	07/31 1437	
	KTLX .xls				
	Power Point				
03 Aug #0	KJIM Product DB	04Aug_KJIM_0340.lb 04Aug_KJIM_1220.lb 04Aug_KJIM_1608.lb			
	KTLX Product DB	04Aug_KTLX_1220.lb 04Aug_KTLX_1608.lb			
	KJIM .raw				

	KJIM .bz2	KJIM_2004_08_04_03_53_41.bz2	08/04 0353	08/04 1547	
	KJIM .xls	KJIM_04Aug.xls			
	KTLX .bz2	KTLX_2004_08_04_03_45_59.bz2	08/04 0345	08/04 1339	
	KTLX .xls	KTLX_04Aug.xls			
	Power Point	04Aug_KJIM.ppt			
03 Aug #1	KJIM Product DB	05Aug_NOP4_1253.lb			
	KTLX Product DB				
	KJIM .raw				
	KJIM .bz2				
	KJIM .xls				
	KTLX .bz2	KTLX_2004_08_04_13_44_37.bz2	08/04 1344	08/04 1558	
	KTLX .xls				
	Power Point	04Aug_KJIM_Algs.ppt			
05 Aug #0	KJIM Product DB	06Aug_KJIM_1520.lb			
	KTLX Product DB				
	KJIM .raw	20040805184855.raw	08/05 1848	08/06 1259	
	KJIM .bz2				
	KJIM .xls	KJIM_05Aug.xls			
	KTLX .bz2				
	KTLX .xls				
	Power Point	05Aug_PlaybackPresentation.ppt			
06 Aug #0	KJIM Product DB	07Aug_KJIM_0235.lb 07Aug_KJIM_1230.lb			
	KTLX Product DB	07Aug_KTLX_0235.lb 07Aug_KTLX_1230.lb			
	KJIM .raw	20040806062204.raw	08/06 0622	08/07 0621	
	KJIM .bz2	KJIM_2004_08_06_22_58_31.bz2	08/06 2258	08/07 0621	
	KJIM .xls	KJIM_06Aug.xls			
	KTLX .bz2	KTLX_2004_08_06_21_33_47.bz2	08/06 2133	08/07 1233	
	KTLX .xls	KTLX_06Aug.xls			
	Power Point	06Aug_KJIM.ppt			
07 Aug #0	KJIM Product DB	08Aug_KJIM_0240.lb 08Aug_KJIM_1220.lb			
	KTLX Product DB	08Aug_KJIM_0240.lb 08Aug_KJIM_1220.lb			
	KJIM .raw	20040807154350.raw	08/07 1543	08/08 0445	

	KJIM .bz2	KJIM_2004_08_07_21_41_06.bz2	08/07 2141	08/08 0444	
	KJIM .xls	KJIM_07Aug.xls			
	KTLX .bz2	KTLX_2004_08_07_21_52_01.bz2	08/07 2152	08/08 0508	
	KTLX .xls	KTLX_07Aug.xls			
	Power Point				
08 Aug #0	KJIM Product DB	08Aug_KJIM_2115.lb 09Aug_KJIM_0230.lb 09Aug_KJIM_1226.lb			
	KTLX Product DB	09Aug_KTLX_0230.lb 09Aug_KTLX_1226.lb			
	KJIM .raw	20040808155035.raw	08/08 1550	08/09 1020	
	KJIM .bz2				
	KJIM .xls				
	KTLX .bz2				
	KTLX .xls				
	Power Point				
08 Aug #1	KJIM Product DB				
	KTLX Product DB				
	KJIM .raw	20040809102630.raw	08/09 1026	08/09 1213	
	KJIM .bz2	KJIM_2004_08_08_21_20_12.bz2	08/08 2120	08/09 1212	
	KJIM .xls	KJIM_08Aug.xls			
	KTLX .bz2	KTLX_2004_08_08_21_14_54.bz2	08/08 2114	08/09 1216	
	KTLX .xls	KTLX_08Aug.xls			
	Power Point				
9 Aug #0	KJIM Product DB	10Aug_KJIM_0230.lb 10Aug_KJIM_1200.lb 10Aug_KJIM_1430.lb			
	KTLX Product DB	10Aug_KTLX_0230.lb 10Aug_KTLX_1200.lb 10Aug_KTLX_1430.lb			
	KJIM .raw	20040809180541.raw	08/09 1805	08/10 0147	
	KJIM .bz2				
	KJIM .xls				
	KTLX .bz2				
	KTLX .xls				
	Power Point				
9 Aug #1	KJIM Product DB				
	KTLX Product DB				

	KJIM .raw	20040810015306.raw	08/10 0153	08/10 1339	
	KJIM .bz2	KJIM_2004_08_09_21_33_37.bz2	08/09 2133	08/10 1338	
	KJIM .xls	KJIM_09Aug.xls			
	KTLX .bz2	KTLX_2004_08_09_20_53_20.bz2	08/09 2053	08/10 1431	
	KTLX .xls	KTLX_09Aug.xls			
	Power Point				